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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/785,234

02/24/2004

Thomas W. Oakes

OAK-01

1047

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02/16/2007

EXAMINER

WILKINS III, HARRY D

ART UNIT

PAPER NUMBER

1742

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/16/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/785,234

Applicant(s)

OAKES, THOMAS W.

Examiner

Harry D. Wilkins, III

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 and 23-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 23-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>2/24/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of group I, claims 1-20 and 23-27, in the reply filed on 19 December 2006 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 7-14 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Shibata et al (US 3,930,151).

Shibata et al teach (see figure 3 and Example 2) a device for generating hydrogen gas comprising a vessel holding an electrolyte solution, a membrane (12) in the vessel arranged to form a chamber, a cathode (11) in the chamber and positioned within the electrolyte solution, an anode (13) in the vessel but not in the chamber and positioned within the electrolyte solution, a hydrogen gas collection area in the chamber, a hydrogen gas exhaustion arrangement coupled to the gas collection area and an electric source connected to the anode and cathode.

Regarding claims 7-9, the cell of Shibata et al would have been capable of operating with any electrolyte. As per MPEP 2114 and 2115, apparatus claims are limited by the claimed structure, not in what material is placed within the structure. As such, the limitations of claims 7-9 have not been given patentable weight.

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Regarding claim 10, the membrane (12) of Shibata et al was arranged to form an oxygen chamber, with the anode (13) arranged within the oxygen chamber.

Regarding claim 11, the device of Shibata et al included two membranes (12) forming two oxygen chambers and an anode (13) within each of the two oxygen chambers.

Regarding claim 12, the device of Shibata et al included an oxygen gas collection area in the oxygen chamber and an oxygen gas exhaustion arrangement coupled to the oxygen gas collection area.

Regarding claims 13 and 14, the membrane (12) of Shibata et al permitted hydrogen ions (protons) to pass through, but not electrons or hydrogen gas.

4. Claims 1-2, 7-14, 23 and 26-27 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Nakata (US 6,198,037).

Nakata teaches (see abstract, figures 5-7) a device for generating hydrogen gas comprising a vessel (31) having a transparent cover (31c) and holding an electrolyte solution (32, 33), a membrane (34) arranged in the vessel to form an oxygen chamber (33) and a hydrogen chamber (32), a cathode (48) positioned in the hydrogen chamber, an anode (46) positioned in the oxygen chamber, a hydrogen gas exhaustion arrangement coupled to the hydrogen chamber and an electric source (35) connected to the cathode and the anode.

Regarding claim 2, the electric source (35) was a photovoltaic cell within the vessel.

Regarding claims 7-9, the cell of Nakata would have been capable of operating with any electrolyte. As per MPEP 2114 and 2115, apparatus claims are limited by the claimed structure, not in what material is placed within the structure. As such, the limitations of claims 7-9 have not been given patentable weight.

Regarding claim 10, the membrane (34) of Nakata was arranged to form an oxygen chamber, with the anode (46) arranged within the oxygen chamber.

Regarding claim 11, the device of Nakata included (see figure 8) two membranes (54) forming two oxygen chambers and an anode within each of the two oxygen chambers.

Regarding claim 12, the device of Nakata included an oxygen gas collection area in the oxygen chamber and an oxygen gas exhaustion arrangement coupled to the oxygen gas collection area.

Regarding claims 13 and 14, the membrane (34) of Shibata et al permitted hydrogen ions (protons) to pass through, but not electrons or hydrogen gas.

Regarding claim 23, the electric source included a solar cell (35) in the vessel and positioned so that light can pass through the transparent cover, the electrolyte solution and onto the solar cell. Further the device included power conduits for connecting the solar cell to the anode and cathode so that electricity generated by the solar cell drove an electrolysis process. The membrane (34) of Nakata et al was made from a polymer electrolyte that conducted hydrogen ions (protons) (see col. 9, lines 45-55).

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Regarding claims 26 and 27, Nakata teaches (see col. 9, lines 9-26) that the anode and cathode were made from a metallic composite material with a platinum coating.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata et al (US 3,930,151) in view of Dederick (US 5,512,787).

Shibata et al do not disclose using an alternative electricity source to power the electrolyzer.

However, Dederick teaches (see Figure 1A and abstract) the concept of using renewable energy sources, such as solar panels, wind generators and wave action generators for powering an electrolyzer to reduce the need for fossil fuels to generate the required electricity.

Therefore, it would have been obvious to one of ordinary skill in the art to have used a renewable energy source, such as a solar cell, hydroelectric plant or a wind turbine to provide the electric power necessary to operate the electrolyzer because Dederick teaches that using such renewable resources reduced reliance on fossil fuels.

7. Claims 3, 15-19, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakata (US 6,198,037) in view of Dederick (US 5,512,787).

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Nakata teaches (see figures) using only the solar panel as the means for generating the electric current for running the electrolyzer.

However, it was well known that solar panels only generated electricity during the day when the sky was sufficiently devoid of clouds.

Dederick teaches (see Figure 1A and abstract) the concept of using other renewable energy sources, such as solar panels, wind generators and wave action generators for powering an electrolyzer to reduce the need for fossil fuels to generate the required electricity. Further, Dederick shows (see Figure 1A) switching gear for using any of a plurality of power sources in combination.

Therefore, it would have been obvious to one of ordinary skill in the art to have used an external renewable energy source, such as a solar cell, hydroelectric plant or a wind turbine to provide the electric power necessary to operate the electrolyzer because Dederick teaches that using such renewable resources reduced reliance on fossil fuels.

8. Claims 4-6 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakata (US 6,198,037) in view of Russell (US 4,052,228).

The teachings of Nakata are described above.

Nakata fails to teach that the vessel and transparent cover were constructed such that the electrolyte and the cover acted to concentrate light rays onto the photovoltaic cell.

Russell teaches (see abstract and drawings) the concept of constructing the shape of a vessel and cover holding a photovoltaic cell such that the cover and the liquid within the vessel act to concentrate light rays on the photovoltaic cell.

Therefore, it would have been obvious to one of ordinary skill in the art to have reshaped the vessel of Nakata as taught by Russell for the purpose of increasing the concentration of light rays onto the photovoltaic cell, thereby increasing production of electric current.

Regarding claim 20, Russell teaches (see col. 1, lines 48-59) the concept of adding a cooling device in thermal communication with the electrolyte to ensure that efficient operation occurs. Therefore, it would have been obvious to one of ordinary skill in the art to have added a cooling device in thermal communication with the electrolyte and coupled to the electric source.

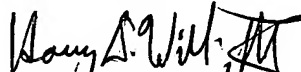
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Harry D Wilkins, III
Primary Examiner
Art Unit 1742

hdw